

Landscape resistance to dispersal: predicting long-term effects on a small and isolated wolf population in southwestern Manitoba, Canada

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Landscape fragmentation affects wildlife population viability, in part through the effects it has on individual dispersal. Considerable fragmentation of native habitats and loss of forest cover has occurred in association with agricultural development over the past 50 years in our study area - the region surrounding Riding Mountain National Park (RMNP) in southwestern Manitoba, Canada. However, some forms of human disturbance impinge on dispersal without simultaneously fragmenting habitats. In this study, we examined how protected area boundaries, roads outside the protected area boundaries, and hostile human behaviour have altered dispersal success without simultaneously fragmenting habitat. We simulated dispersal using HexSim, a spatially-explicit individual-based population model, parameterized with data on wolves (*Canis lupus*) in the RMNP region. Scenarios that accounted for negative human attitudes and roads outside the protected area boundaries exhibited lower mean population size than scenarios that ignored these details. In contrast, increasing deflection from protected area boundaries did not appear to have a significant consequence for population viability. Our results illustrate how habitat fragmentation itself can fail to account for the impacts on wildlife imparted by some forms of dispersal barriers.